



Dart Aerospace Ltd.  
1270 Aberdeen St  
Hawkesbury, ON  
K6A 1K7  
Canada

Tel (613) 632-5200

647.3902  
Job Sheet 171194

Part No: 647.3902

Job Qty: 2 ea

Part Name: Lower Deflector Assembly, High



Part Weight: 0 lbs

Status: Scheduled

Priority: Medium

Job Created: 1/30/18

Job Tracking No:

Due Date: 2/15/18

Created By: Michelle Gagnon-Donovan

Type: Stock

Description:

Note: DWG REV C2 SHEET 1 IPP REV:A 13.09.03 NEW ISSUE DD VERF:JLM

Ship Via:

### Bill of Materials

### Job Routing

| Op No | Operation          | Qty   | Start Date | Due Date | Standard  |         | Workcenter/Supplier   |       | Lead Time | Sign-off           |
|-------|--------------------|-------|------------|----------|-----------|---------|-----------------------|-------|-----------|--------------------|
|       |                    |       |            |          | Setup hrs | Run Hrs | Workcenter / Supplier |       |           |                    |
| 90    | Start up Operation | 2 Ea  |            | 2/14/18  | 0.00      | 0.00    | Start Up Stores/Pkg-1 |       |           | 5/8 FEB 22 2018    |
| 110   | Packaging          | 2 pcs |            | 2/14/18  | 0.00      | 0.00    | Packaging1-1          |       |           | 5/8 FEB 22 2018    |
| 120   | Small Fab          | 2 pcs |            | 2/15/18  | 0.00      | 0.74    | Small Fab-1           |       |           | DAS 38             |
| 130   | QC                 | 2 pcs |            | 2/15/18  | 0.00      | 0.00    | QC5                   |       |           | 9-89               |
| 140   | Packaging          | 2 pcs |            | 2/15/18  | 0.00      | 0.00    | Packaging3-1          | CKOHA |           | FEB 27 2018        |
| 150   | QC21-SA            | 2 Ea  |            | 2/15/18  | 0.00      | 0.00    | QC21                  |       |           | DAS 21 FEB 28 2018 |

Part Op 120 - Assemble as per dwg and apply locite 598 on all faying surfaces per note .  
Descriptions: 140 - \*\*\*IDENTIFY AS PER IAW MPP-120\*\*\*

### Job BOM

| Part / Item   | Component Name                           | Quantity    | Operation             | Container |
|---------------|------------------------------------------|-------------|-----------------------|-----------|
| 647.3912      | Breakaway Tip Wirestrike for Wire Strike | 2 Ea (1 ea) | 90-Start up Operation |           |
| 647.3914      | Breakaway Tip, Long                      | 2 Ea (1 ea) | 90-Start up Operation |           |
| MS20470AD6-12 | Rivet                                    | 6 Ea (3 ea) | 90-Start up Operation |           |

### Job Allocations

| Operation             | Component Part | Required | Inventory | Allocated |
|-----------------------|----------------|----------|-----------|-----------|
| 90-Start up Operation | 647.3912       | 2        | 4         | 0         |
|                       | 647.3914       | 2        | 3         | 0         |
|                       | MS20470AD6-12  | 6        | 325       | 0         |

### Part Specifications

Specifications c



Container No: S044434



Part: 647.3902  
Job No: 171194  
Serial No/Batch: S044434  
Revision: 647.3900  
Inspector:

Dart Aerospace Ltd.  
1270 Aberdeen Street  
Hawkesbury, ON K6A 1K7  
CANADA  
TEL: 1 613 632-5200  
Email: sales@dartaero.com  
www.dartaerospace.com

Date: 02/22/18

DQA: \_\_\_\_\_ Date: \_\_\_\_\_



## WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: \_\_\_\_\_ Date: \_\_\_\_\_

Work Order update only ☐

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |  |                                              |  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|----------------------------------------------|--|
| Work Order: _____<br><br>Part No. _____<br><br>NCR No. _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>DISPOSITION</b><br><br>Rework <input type="checkbox"/><br>Scrap <input type="checkbox"/><br>Use-as-is <input type="checkbox"/><br>Suspected Unapproved <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <b>AGAINST DEPARTMENT/PROCESS</b><br><br><div style="display: flex; justify-content: space-between;"> <div>             Skid-tube <input type="checkbox"/><br/>             Machining <input type="checkbox"/><br/>             Thermoforming <input type="checkbox"/><br/>             Large Fab <input type="checkbox"/> </div> <div>             Cross tube <input type="checkbox"/><br/>             Small Fab <input type="checkbox"/><br/>             Finishing <input type="checkbox"/><br/>             Composite <input type="checkbox"/> </div> <div>             Water Jet <input type="checkbox"/><br/>             Prod. Eng. Coord. <input type="checkbox"/><br/>             Rec/Store/Packaging <input type="checkbox"/><br/>             Supplier <input type="checkbox"/> </div> <div>             Engineering <input type="checkbox"/><br/>             Quality <input type="checkbox"/><br/>             Other <input type="checkbox"/> </div> </div>                                                                                                                                                                                                                            |  |                                              |  |
| Date : _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Step #: _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | QTY Effective : _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |  | MRB (QSI042) Approval                        |  |
| Description Work Order Deviation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Disposition                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  | Completed By                                 |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |  | Lead hand / Supervisor Approval Verification |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |  | QC / QA Coordinator Approval                 |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |  |                                              |  |
| Root Cause                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | FAULT CATEGORY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  |                                              |  |
| <div style="display: flex;"> <div style="flex: 1;">           Environment <input type="checkbox"/><br/>           Design <input type="checkbox"/><br/>           Doc/Data <input type="checkbox"/><br/>           Equip/Tooling <input type="checkbox"/><br/>           Handling/Pre <input type="checkbox"/><br/>           Material <input type="checkbox"/><br/>           Internal Transport <input type="checkbox"/><br/>           Tribal Knowledge <input type="checkbox"/><br/>           LOA <input type="checkbox"/><br/>           Substation <input type="checkbox"/><br/>           Past Expiry Date <input type="checkbox"/><br/>           Misidentified <input type="checkbox"/> </div> <div style="flex: 1;">           No Re-verification <input type="checkbox"/><br/>           Operator <input type="checkbox"/><br/>           Offset/Setup <input type="checkbox"/><br/>           Supplier <input type="checkbox"/><br/>           Training <input type="checkbox"/><br/>           Use for Testing <input type="checkbox"/><br/>           Poor Information <input type="checkbox"/><br/>           Rushing <input type="checkbox"/><br/>           Product Improvement <input type="checkbox"/><br/>           Process Improvement <input type="checkbox"/><br/>           Manufacturing Process <input type="checkbox"/><br/>           Past Due <input type="checkbox"/> </div> </div> | <div style="display: flex;"> <div style="flex: 1;">           Pressure/Forced <input type="checkbox"/><br/>           Bending <input type="checkbox"/><br/>           Centre Not Concentric <input type="checkbox"/><br/>           Cracks <input type="checkbox"/><br/>           Crimp/Kink/Ripple/Wave <input type="checkbox"/><br/>           Cuffs <input type="checkbox"/><br/>           Crushing <input type="checkbox"/><br/>           Heat Treat <input type="checkbox"/><br/>           Wave/Twist in Tube <input type="checkbox"/><br/>           Marks/Chatter <input type="checkbox"/> </div> <div style="flex: 1;">           Temperature/Cure <input type="checkbox"/><br/>           Set-up <input type="checkbox"/><br/>           BOM/Route <input type="checkbox"/><br/>           Broken/Damage/Defect <input type="checkbox"/><br/>           Inspection Incomplete/Unqualified <input type="checkbox"/><br/>           Contamination <input type="checkbox"/><br/>           Countersink <input type="checkbox"/><br/>           Cut Too Short <input type="checkbox"/><br/>           Instructions Incomplete/Unclear <input type="checkbox"/><br/>           Drill Holes <input type="checkbox"/> </div> </div> | <div style="display: flex;"> <div style="flex: 1;">           Power Loss/Surge <input type="checkbox"/><br/>           Folio/Program <input type="checkbox"/><br/>           Grain <input type="checkbox"/><br/>           Weld <input type="checkbox"/><br/>           Wrong Stock Pulled <input type="checkbox"/><br/>           Out of Sequence <input type="checkbox"/><br/>           Off-set <input type="checkbox"/><br/>           Mislabeled <input type="checkbox"/><br/>           Fit/Function <input type="checkbox"/><br/>           Misaligned/off center <input type="checkbox"/> </div> <div style="flex: 1;">           Positioned Wrong <input type="checkbox"/><br/>           Outside Dimensions <input type="checkbox"/><br/>           Over/Under tolerance <input type="checkbox"/><br/>           Part Incorrect <input type="checkbox"/><br/>           Part Lost/Missing <input type="checkbox"/><br/>           Part Moved <input type="checkbox"/><br/>           Drawing <input type="checkbox"/><br/>           Finish <input type="checkbox"/><br/>           Misread <input type="checkbox"/><br/>           Turning Sequence <input type="checkbox"/> </div> </div> |  |                                              |  |
| OTHER : _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |  |                                              |  |





APICAL INDUSTRIES, INC.  
dba DART AEROSPACE

ENGINEERING CHANGE NOTICE NO. 04948

SHEET 1 OF 2

DWG NO. 647.3900

REV: C

PREPARED BY: M. ANDECK

DATE: 05/04/15

EFFECT ON DWG  
☐ INC. ☒ UNINC.

DWG TITLE: DEFLECTORS

APPROVED BY:

ENGR

*J. Brans*

MFG

*Dan Decker*

QC

*[Signature]*

EFF:

CURRENT ORDER

TRANSACTION CODES (TC):  
A-ADD C-CREATE  
R-REVISE D-DELETE

REASON: REVISED TOLERANCE AND NOTES

ECR:

D-15-01

NOTES:

1 MATERIAL: ALUMINUM 7075-T651 PER AMS-QQ-A-250/12.

2 FINISH: HARD ANODIZE IAW MIL-A-8625 TYPE III, CLASS 2, COLOR BLACK;

3. DEBURR AND BREAK ALL SHARP EDGES.

4. IDENTIFY IAW MPP-120.

5 APPLY F/N 3 AS REQUIRED TO ALL FAYING SURFACES OF F/N 6, 7 & 8 UPON ASSY.

6 MAXIMUM OR MINIMUM DIMENSION AFTER FINISH.

7. .0625 HOLE MAY BE ADDED FOR FINISHING PURPOSES

8 FINISH: PRETREAT PR-148 ADHESION PROMOTER, PRIME IAW MIL-P-23377J, TYPE I, CLASS N; 1-2 MIL MAX. APPLY FINISH AFTER ASSEMBLY.

9 FINISH: PRETREAT PR-148 ADHESION PROMOTER, PRIME IAW MIL-P-23377J, TYPE I, CLASS N; 1-2 MIL MAX.

10 MATERIAL: ALUMINUM 2024-T3 PER AMS-QQ-A-250/4.

SHOP COPY

RETURN TO

ENGINEERING

UNCONTROLLED COPY

SUBJECT TO AMENDMENT

WITHOUT NOTICE

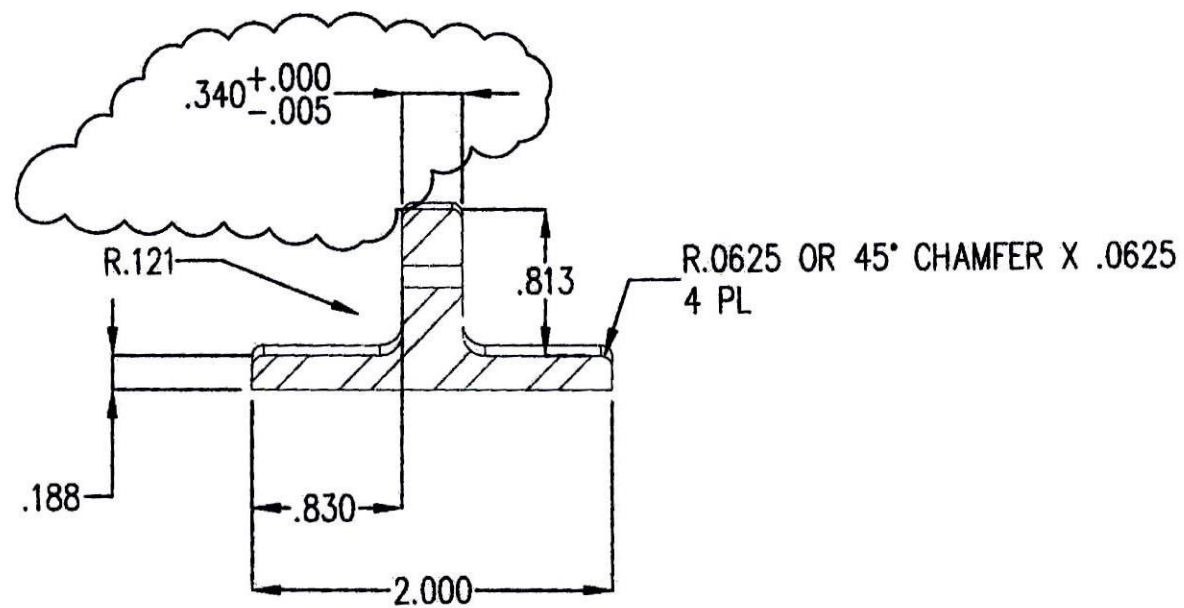
WORK ORDER

NO. 171194

JAN 31 2018

**SHEET 1, ZONE B1 IS:**

|                                                                                                                                                                             |    |             |       |       |       |             |                                                                                       |                                                                                       |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|-------------|-------|-------|-------|-------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|                                                                                                                                                                             |    |             |       |       |       |             |                                                                                       |                                                                                       |
| 11                                                                                                                                                                          | R  | 647.3917    | 2     |       |       | DOUBLER     |  |  |
| F/N                                                                                                                                                                         | TC | PART NUMBER | .3903 | .3902 | .3901 | DESCRIPTION | MATERIAL                                                                              | SPECIFICATION                                                                         |
|                                                                                                                                                                             |    |             | QTY   |       |       |             |                                                                                       |                                                                                       |
| DOCUMENTS EFFECTED:                                                                                                                                                         |    |             |       |       |       |             | CHANGE CATEGORY                                                                       | DER REVIEW REQUIRED                                                                   |
| <input type="checkbox"/> PATTERN <input type="checkbox"/> MDL <input type="checkbox"/> INSTALL INSTRUC <input type="checkbox"/> ICA <input checked="" type="checkbox"/> BOM |    |             |       |       |       |             | <input type="checkbox"/> MAJOR <input checked="" type="checkbox"/> MINOR              | <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO                   |



**SHEET 11, ZONE C1 IS:**

# APICAL

INDUSTRIES, INC.

ENGINEERING CHANGE NOTICE NO.

04556

SHEET 1 of 2

DWG NO. 647.3900

REV: C

PREPARED BY D. MEJIA

DATE: 06/10/2014

EFFECT ON DWG  
☐ INC. ☒ UNINC.

DWG TITLE: DEFLECTORS

APPROVED BY: ENGR. *[Signature]*

MFG *[Signature]* QC *[Signature]*

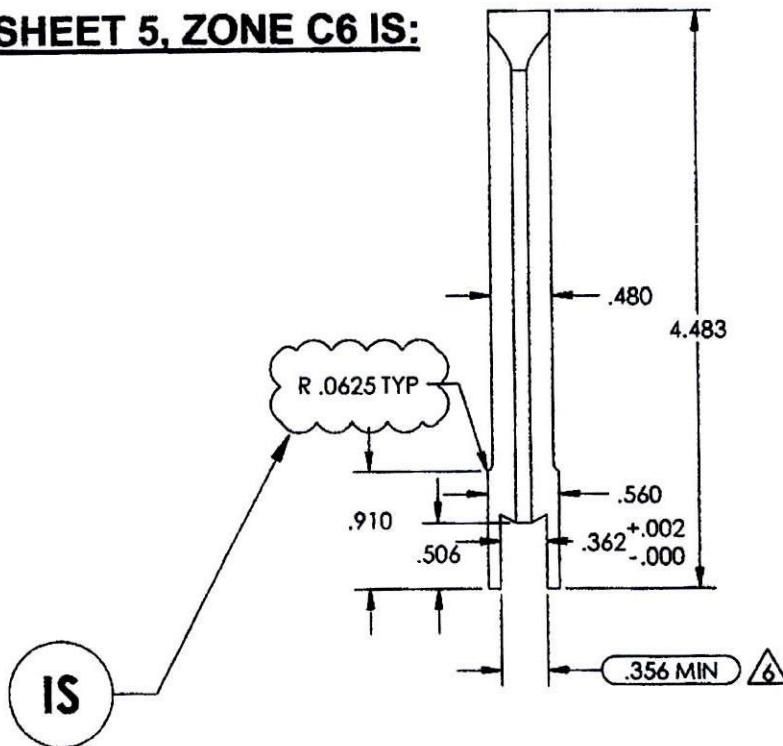
EFF. NEXT ORDER

TRANSACTION CODES (TC):  
A-ADD C-CREATE  
R-REVISE D-DELETE

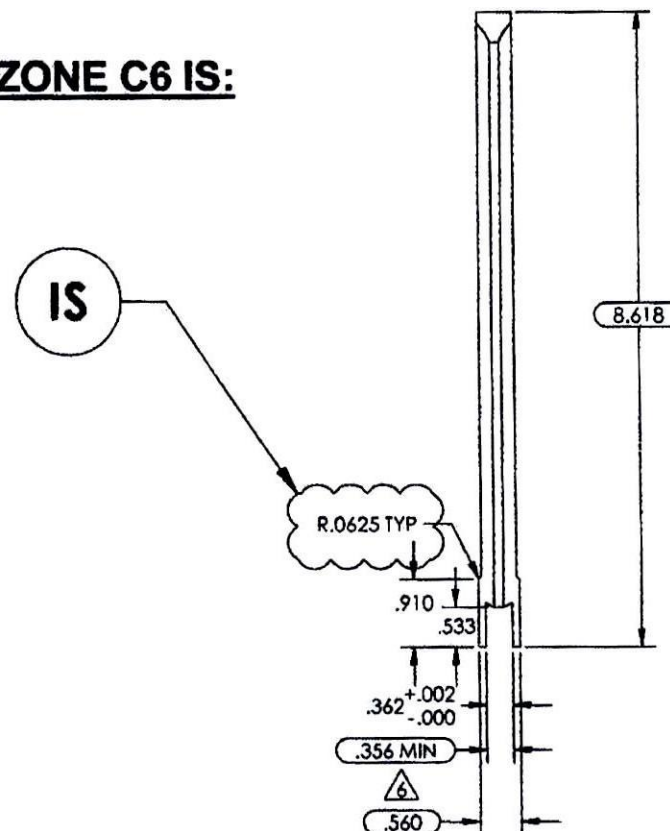
REASON: CHANGED P/N, DIMENSIONS & REVISED BOM

ECR: D-14-04

**SHEET 5, ZONE C6 IS:**

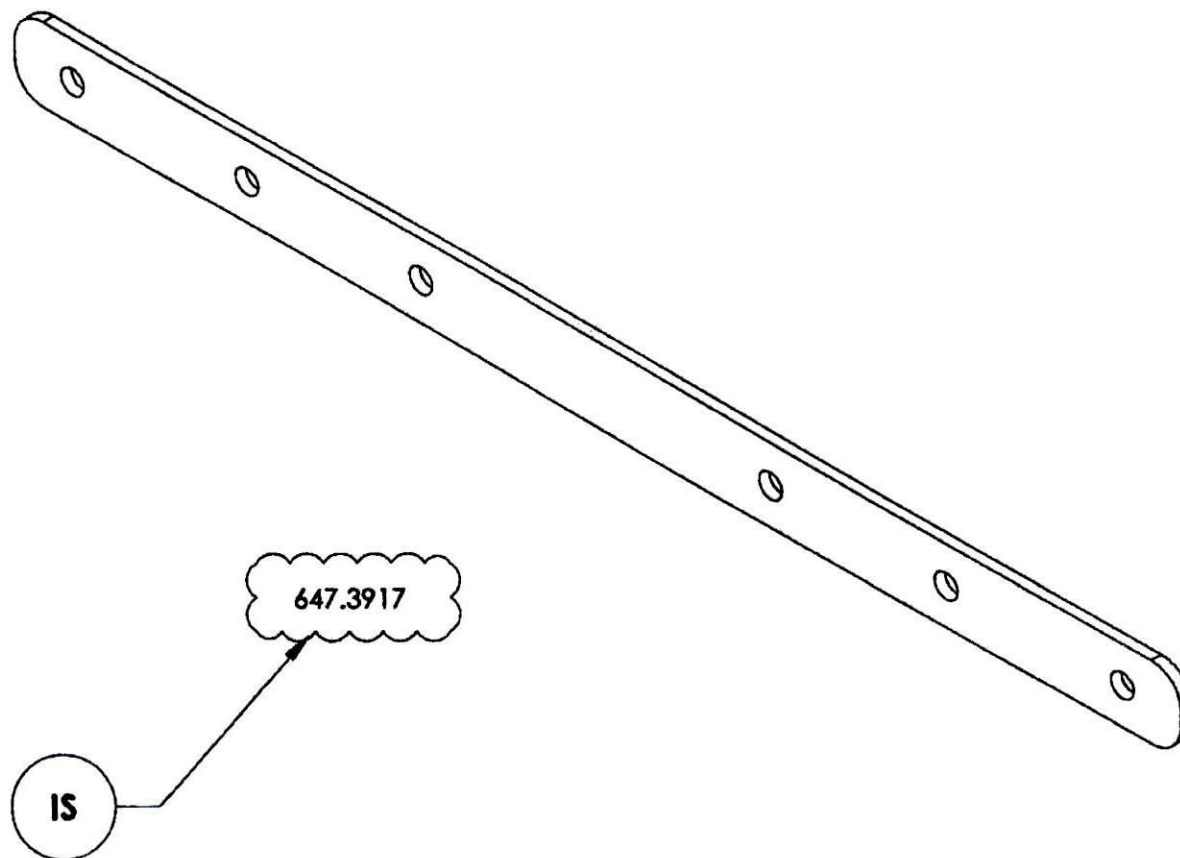


**SHEET 6, ZONE C6 IS:**



**SHEET 1, BOM IS:**

|                     |    |             |       |       |       |             |                     |               |
|---------------------|----|-------------|-------|-------|-------|-------------|---------------------|---------------|
| 11                  | R  | 647.3917    | 2     |       |       | DOUBLER     | 1                   | 8             |
| F/N                 | TC | PART NUMBER | .3903 | .3902 | .3901 | DESCRIPTION | MATERIAL            | SPECIFICATION |
|                     |    | QTY         |       |       |       |             |                     |               |
| DOCUMENTS EFFECTED: |    |             |       |       |       |             | CHANGE CATEGORY     |               |
|                     |    |             |       |       |       |             | DER REVIEW REQUIRED |               |
|                     |    |             |       |       |       |             |                     |               |
|                     |    |             |       |       |       |             |                     |               |

**SHEET 12, ZONE B5 IS:**



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# NOTES:

1. MATERIAL: ALUMINUM 7075-T651 PER AMS-QQ-A-250/12.
2. FINISH: HARD ANODIZE IAW MIL-A-8625 TYPE III, CLASS 2, COLOR BLACK;
3. DEBURR AND BREAK ALL SHARP EDGES.
4. IDENTIFY IAW MPP-120.
5. APPLY F/N 3 AS REQUIRED TO ALL FAYING SURFACES OF F/N 6, 7 & 8 UPON ASSY.
6. MAXIMUM OR MINIMUM DIMENSION AFTER FINISH.
7. .0625 HOLE MAY BE ADDED FOR FINISHING PURPOSES
8. FINISH: PRETREAT PR-148 ADHESION PROMOTER, PRIME IAW MIL-P-23377J, TYPE I, CLASS N; 1-2 MIL MAX. APPLY FINISH AFTER ASSEMBLY.
9. FINISH: PRETREAT PR-148 ADHESION PROMOTER, PRIME IAW MIL-P-23377J, TYPE I, CLASS N; 1-2 MIL MAX.

| REVISIONS |                                       |          |          |
|-----------|---------------------------------------|----------|----------|
| REV.      | DESCRIPTION                           | DATE     | APPROVED |
| N/C       | LAST PROTOTYPE RELEASE: PR1           |          | N/C      |
| N/C       | INITIAL RELEASE                       | 09/10/09 | P. BRAVO |
| A         | INCORPORATED ECN 02864, 0339F & 03595 | 07/24/12 | P. BRAVO |
| B         | INCORPORATED ECN 04005                | 08/03/13 | P. BRAVO |
| C         | INCORPORATED ECN 04008, 04083 & 04250 | 11/18/13 | P. BRAVO |

UNINCORPORATED ECN(S)

04556, 04948,

|               |       |       |        |                                                                    |                              |                   |      |
|---------------|-------|-------|--------|--------------------------------------------------------------------|------------------------------|-------------------|------|
| 6             |       |       | 12     | 601.3072                                                           | RIVET                        | CR3213-6-9        |      |
| 2             |       |       | 11     | 647.3917                                                           | DOUBLER                      |                   |      |
| 1             |       |       | 10     | 647.3916                                                           | DEFLECTOR, UPPER HALF        | △                 | △    |
| 1             |       |       | 9      | 647.3915                                                           | DEFLECTOR, LOWER HALF        | △                 | △    |
|               | 1     |       | 8      | 647.3914                                                           | BREAKAWAY TIP LONG           | △                 | △△   |
|               |       | 1     | 7      | 647.3913                                                           | BREAKAWAY TIP MEDIUM         | △                 | △△△  |
|               | 1     | 1     | 6      | 647.3912                                                           | LOWER DEFLECTOR              | △                 | △△   |
|               |       |       | 5      | 647.3911                                                           | 212 UPPER DEFLECTOR          | △                 | △△   |
|               |       |       | 4      | 647.3910                                                           | 412 UPPER DEFLECTOR          | △                 | △△   |
| A/R           | A/R   | A/R   | 3      | 601.2045                                                           | RTV, LOCTITE 598             |                   | △    |
|               | 3     | 2     | 2      | 601.3074                                                           | RIVET                        | M520470AD<br>6-12 |      |
|               |       |       | 1      |                                                                    | DELETED                      |                   |      |
| X             |       |       |        | 647.3903                                                           | DEFLECTOR ASSY               |                   | △    |
|               | X     |       |        | 647.3902                                                           | LOWER DEFLECTOR ASSY<br>HIGH |                   |      |
|               |       | X     |        | 647.3901                                                           | LOWER DEFLECTOR ASSY<br>LOW  |                   |      |
| .3903         | .3902 | .3901 | FIND # | PART #                                                             | DESCRIPTION                  | MAT'L             | SPEC |
| QTY           |       |       |        | PARTS LIST                                                         |                              |                   |      |
| NEXT ASSY (S) |       |       |        | APICAL INDUSTRIES                                                  |                              |                   |      |
| 647.3800      |       |       |        | 2608 TEMPLE HEIGHTS DR.<br>OCEANSIDE, CA. 92056-3512 (760)724-5300 |                              |                   |      |
|               |       |       |        | DEFLECTORS                                                         |                              |                   |      |
|               |       |       |        | 647.3900                                                           |                              |                   |      |
|               |       |       |        | SCALE NONE                                                         |                              |                   |      |
|               |       |       |        | SHEET 1 OF 12                                                      |                              |                   |      |

647.3901

647.3902

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.125 X 45.0° TYP

SECTION B-B

Ø.177 THRU 3PL

.266 X 17.9°

DETAIL A

.045

.603

.923

R.915

4.220±.002

2.110±.002

R.279

R3.406

15.896

15.304

15.046

6.446

.312

0

18.502  
18.127

35.8°

10.702

8.599

6.253

1.700

.777

0

Ø.189

40.2°

A

6

.340<sup>+0.000</sup>  
-.002

.346 MAX

DETAIL C

.700

.035 X 45.0° TYP

.375

15.896

C

647.3911

|                                                                                                                                             |            |                                                                                                |           |          |          |               |  |
|---------------------------------------------------------------------------------------------------------------------------------------------|------------|------------------------------------------------------------------------------------------------|-----------|----------|----------|---------------|--|
| FORMAL DATE<br>(MM-DD-YY)                                                                                                                   | 05-10-09   | <b>APICAL INDUSTRIES</b><br>2608 TEMPLE HEIGHTS DR.<br>OCEANSIDE, CA. 92056-3512 (760)724-5300 |           |          |          |               |  |
| DRAWN BY                                                                                                                                    | C. REED    |                                                                                                |           |          |          |               |  |
| CHECKED BY                                                                                                                                  | D. BARKLEY |                                                                                                |           |          |          |               |  |
| DRAWING APPROVAL                                                                                                                            |            |                                                                                                |           |          |          |               |  |
| BY                                                                                                                                          |            |                                                                                                |           |          |          |               |  |
| DATE                                                                                                                                        |            |                                                                                                |           |          |          |               |  |
| CONTRACT NO.                                                                                                                                |            | <b>DEFLECTORS</b>                                                                              |           |          |          |               |  |
|                                                                                                                                             |            |                                                                                                |           |          |          |               |  |
| UNLESS OTHERWISE SPECIFIED<br>DIMENSIONS ARE IN INCHES<br>TOLERANCES ARE:<br>1 PLACE DECIMALS ±.01<br>2 PLACE DECIMALS ±.005<br>ANGLES ±.5° |            | SER                                                                                            | CAGE CODE | DWG. NO. | 647.3900 | REV.          |  |
|                                                                                                                                             |            | B                                                                                              | 07MZ6     |          |          | C             |  |
|                                                                                                                                             |            | SCALE NONE                                                                                     |           |          |          | SHEET 2 OF 12 |  |

APICAL INDUSTRIES  
2608 TEMPLE HEIGHTS DR.  
OCEANSIDE, CA. 92056-3512 (760)724-5300

DEFLECTORS



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.125 X 44.9°

SECTION E-E

.274 X 17.9°

Ø.177 THRU 3PL

.120

.788

2.110±.002

R1.100

.886

DETAIL D

.700

.030 X 45.0° TYP

.340<sup>+.000</sup>  
-.002

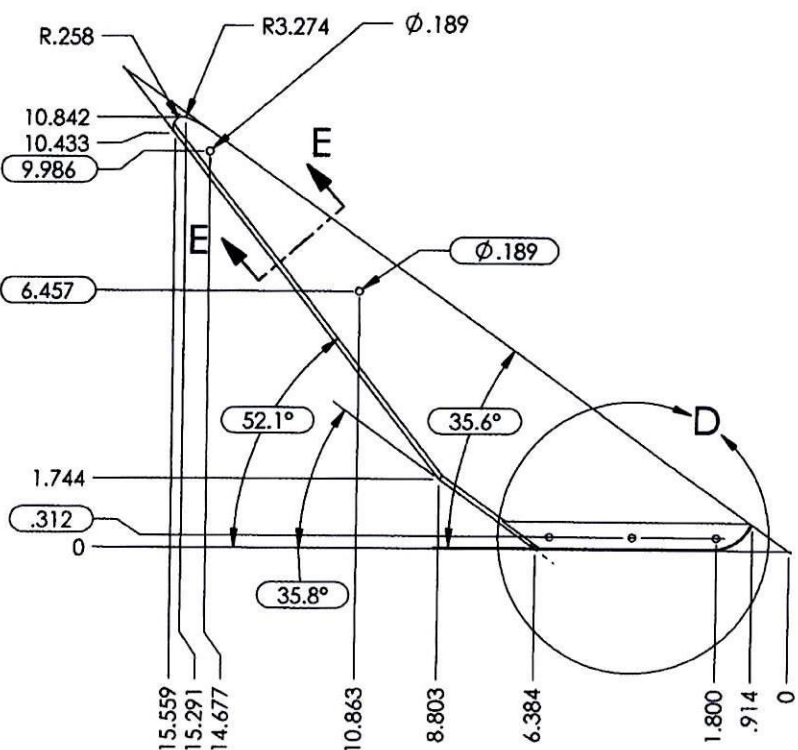
△.346 MAX

DETAIL F

10.850

.375

647.3910



|                                                                                                                                             |  |                                                                    |                  |
|---------------------------------------------------------------------------------------------------------------------------------------------|--|--------------------------------------------------------------------|------------------|
| ORIGINAL DATE<br>1/10/01                                                                                                                    |  | APICAL INDUSTRIES                                                  |                  |
| DRAWN BY<br>D. SCHUP                                                                                                                        |  | 2608 TEMPLE HEIGHTS DR.<br>OCEANSIDE, CA. 92056-3512 (760)724-5300 |                  |
| CHECKED BY<br>D. BAYTER                                                                                                                     |  | DEFLECTORS                                                         |                  |
| DRAWING APPROVAL<br>P. BAYTO                                                                                                                |  | CONTRACT NO.                                                       |                  |
| UNLESS OTHERWISE SPECIFIED<br>DIMENSIONS ARE IN INCHES<br>TOLERANCES ARE:<br>2 PLACE DECIMALS ±.01<br>3 PLACE DECIMALS ±.005<br>ANGLES ±.5° |  | SHEET<br>B                                                         | REV<br>C         |
| CAGE CODE<br>07M26                                                                                                                          |  | DWG. NO.<br>647.3900                                               | SHEET<br>3 OF 12 |
| SCALE: NONE                                                                                                                                 |  |                                                                    |                  |

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**SECTION L-L**

29.9°

.753

**SECTION M-M**

.130 X 45.0° TYP

**DETAIL H**

.705

1.533

.749

.271

.133

.065

1.432°

Ø.194 TYP

**DETAIL J**

.380

.753

.100 X 45.0°

.340<sup>+0.000</sup><sub>-.002</sub>

.346 MAX

Ø.177

**DETAIL K**

.380

.356 MAX

.350<sup>+0.000</sup><sub>-.002</sub>

**DETAIL G**

Ø.177 TYP

.024

.780

R1.000

.915

2.110±.002

4.220±.002

.291 X 15.6°

7.422

Ø.177

8.189

6.442

1.908

43.7°

33.4°

.320

14.029

13.357

11.791

11.038

10.098

647.3912

**DEFLECTORS**

ORIGINAL DATE: 08-10-09  
 DRAWN BY: [blank]  
 CHECKED BY: [blank]  
 DESIGNED BY: [blank]  
 DRAWING APPROVAL: [blank]  
 P. BRAVO  
 08-10-09  
 CONTRACT NO: [blank]

UNLESS OTHERWISE SPECIFIED  
 DIMENSIONS ARE IN INCHES  
 TOLERANCES ARE:  
 2 PLACES DECIMALS ±.01  
 3 PLACES DECIMALS ±.005  
 ANGLES ±.5°

SHEET 4 OF 12

647.3912

Ø.177 TYP

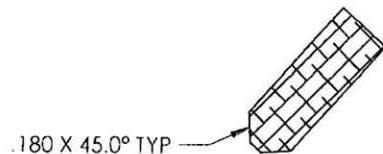
**APICAL INDUSTRIES**  
2608 TEMPLE HEIGHTS DR.  
OCEANSIDE, CA. 92056-3512 (760)724-5300  
**DEFLECTORS**

|                                          |                     |
|------------------------------------------|---------------------|
| ORIGINAL DATE<br>[MO-DA-YR] 09-10-09     |                     |
| DRAWN BY<br>D.SCHUR                      | CHECKER<br>D.BARKER |
| DRAWING APPROVAL<br>P. BRAVO<br>09-10-09 |                     |
| CONTRACT No.                             |                     |

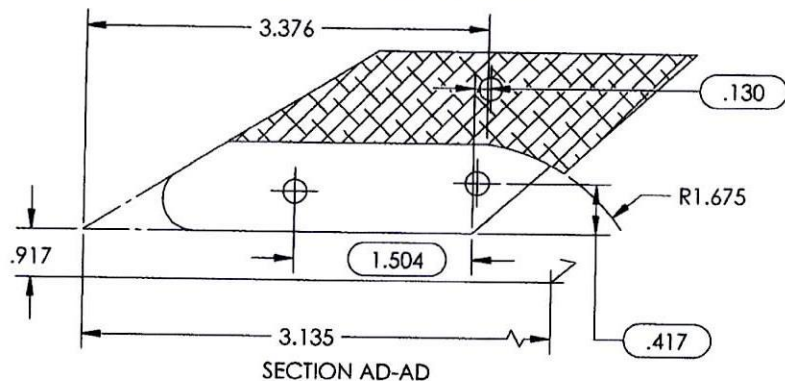
UNLESS OTHERWISE SPECIFIED  
DIMENSIONS ARE IN INCHES  
TOLERANCES ARE:  
2 PLACE DECIMALS  $\pm .01$   
3 PLACE DECIMALS  $\pm .005$   
ANGLES  $\pm .5^\circ$

|            |                    |                      |           |
|------------|--------------------|----------------------|-----------|
| 181<br>B   | CAGE CODE<br>07MZ6 | DWG. NO.<br>647.3900 | REV.<br>C |
| SCALE NONE |                    | SHEET 4 OF 12        |           |

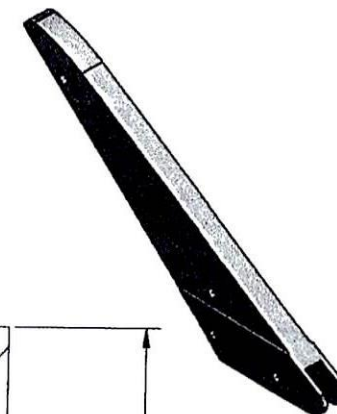
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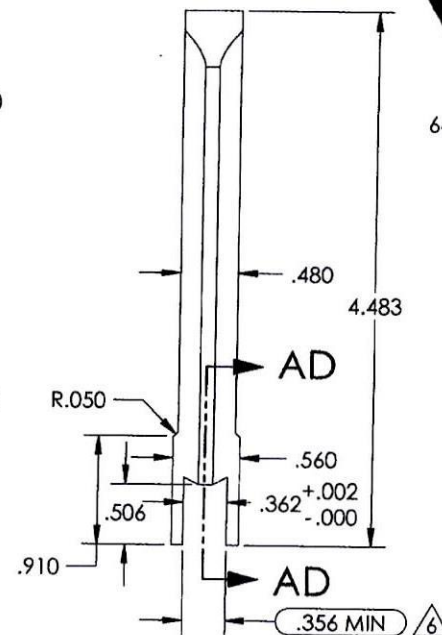
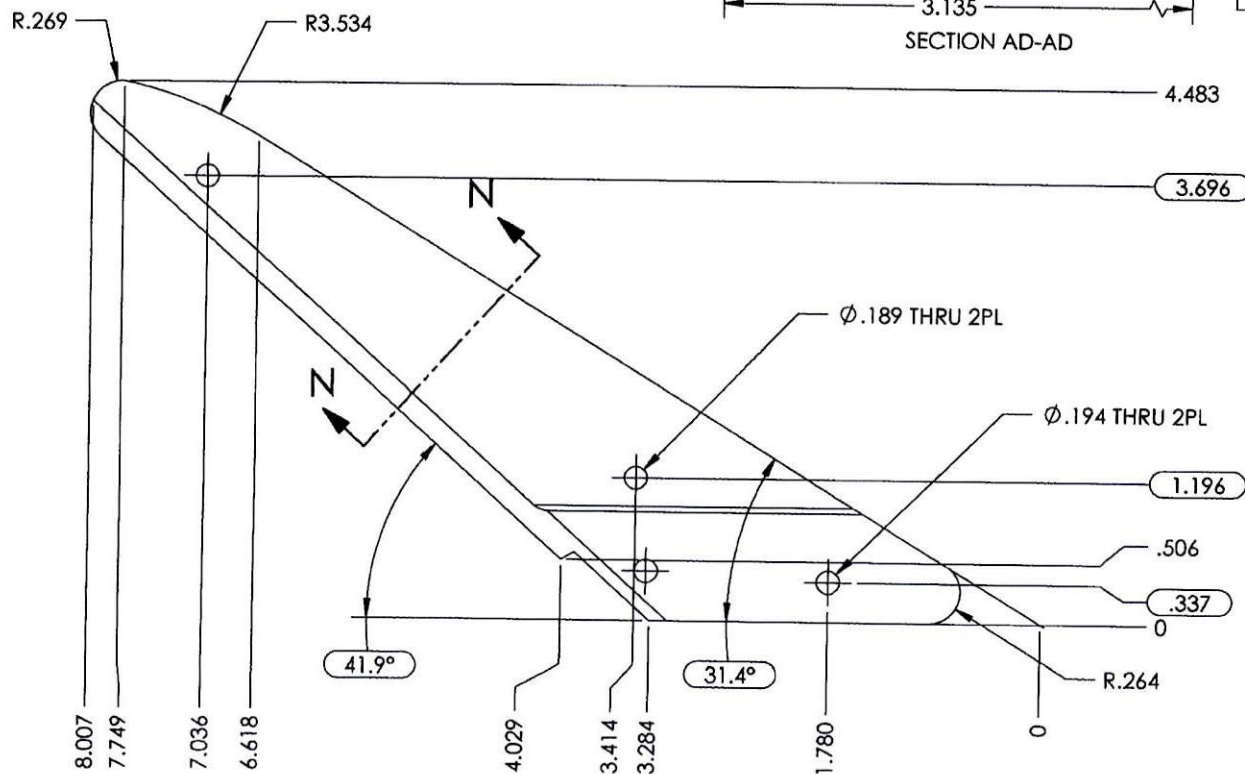
SECTION N-N



SECTION AD-AD



647.3913



|                                                                                                                                              |           |                     |     |                     |  |  |
|----------------------------------------------------------------------------------------------------------------------------------------------|-----------|---------------------|-----|---------------------|--|--|
| ORIGINAL DATE<br>(MM-DD-YY) ON 10-20                                                                                                         |           | DRAWN BY<br>DUSCHER |     | CHECKED<br>D MARKER |  |  |
| DRAWING APPROVAL<br>P. BRAVO                                                                                                                 |           | DATE<br>06/10/00    |     | CONTRACT NO.        |  |  |
| UNLESS OTHERWISE SPECIFIED<br>DIMENSIONS ARE IN INCHES<br>TOLERANCES ARE:<br>3 PLACE DECIMALS ±.01<br>3 PLACE DECIMALS ±.005<br>ANGLES ± .5° |           |                     |     |                     |  |  |
| SHEET                                                                                                                                        | CAGE CODE | DWG. NO.            | REV |                     |  |  |
| B                                                                                                                                            | 07M26     | 647.3900            | C   |                     |  |  |
| SCALE                                                                                                                                        |           | NONE                |     | SHEET 5 OF 12       |  |  |

APICAL INDUSTRIES

2608 TEMPLE HEIGHTS DR.  
OCEANSIDE, CA. 92056-3512 (760) 724-5300

DEFLECTORS



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SECTION T-T

.175 X 45.0° TYP

SECTION AB-AB

647.3914

DEFLECTORS

APICAL INDUSTRIES

2608 TEMPLE HEIGHTS DR.  
OCEANSIDE, CA. 92056-3512 (760)724-5300

ORIGINAL DATE 07-10-08  
DRAWN BY CHICKER  
DSCUR D.BARKER  
DRAWING APPROVAL  
P. BRAY  
07-10-08  
CONTRACT NO.

UNLESS OTHERWISE SPECIFIED  
DIMENSIONS ARE IN INCHES  
TOLERANCES ARE:  
2 PLACE DECIMALS ±.01  
3 PLACE DECIMALS ±.005  
ANGLES ±.5°

SHEET 6 OF 12

SECTION T-T

SECTION AB-AB

647.3914

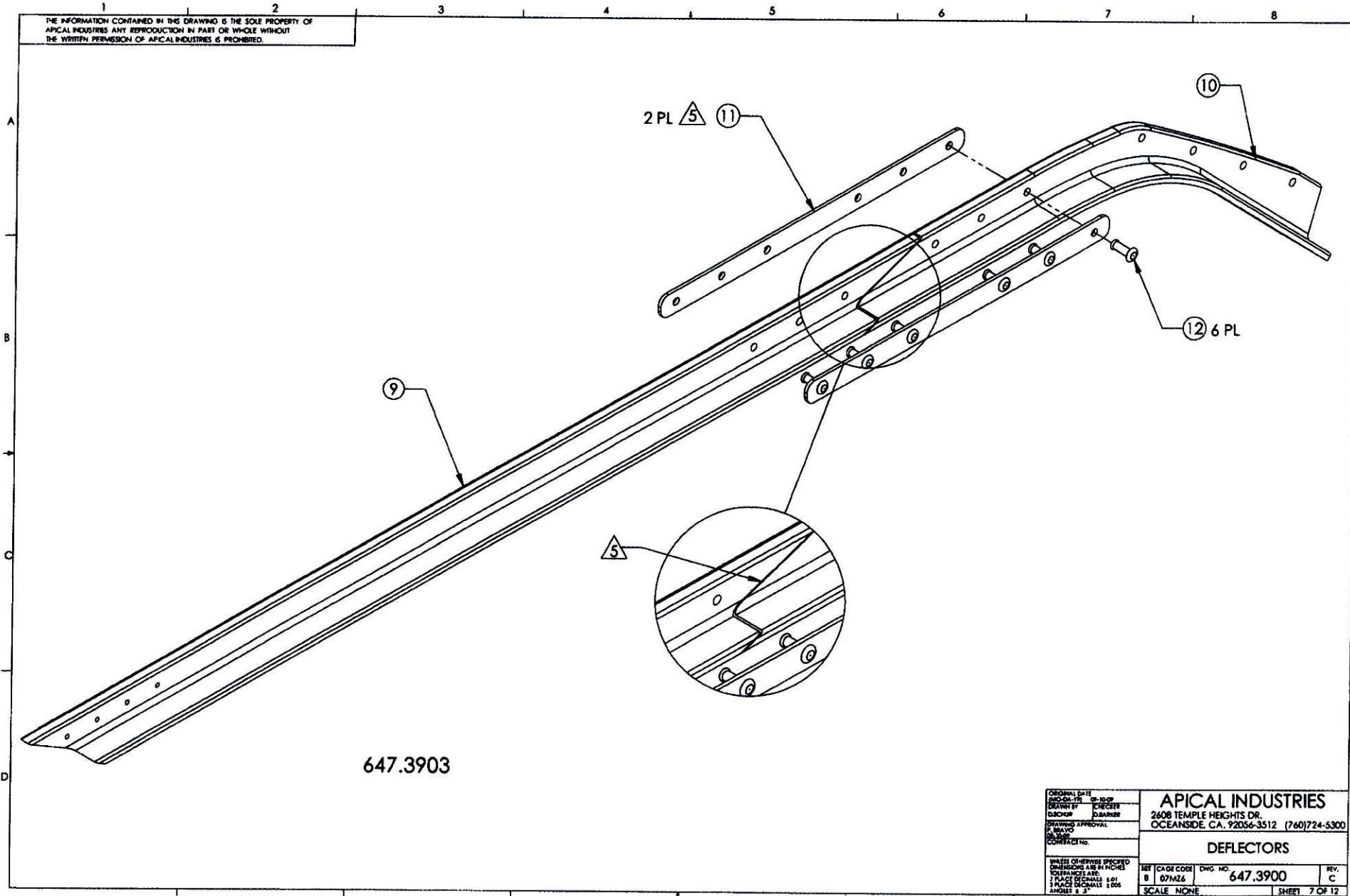
2608 TEMPLE HEIGHTS DR.  
OCEANSIDE, CA. 92056-3512 (760)724-5300

## DEFLECTORS

|          |                    |                      |           |
|----------|--------------------|----------------------|-----------|
| SRI<br>B | CAGE CODE<br>07M26 | DWG. NO.<br>647.3900 | REV.<br>C |
|----------|--------------------|----------------------|-----------|

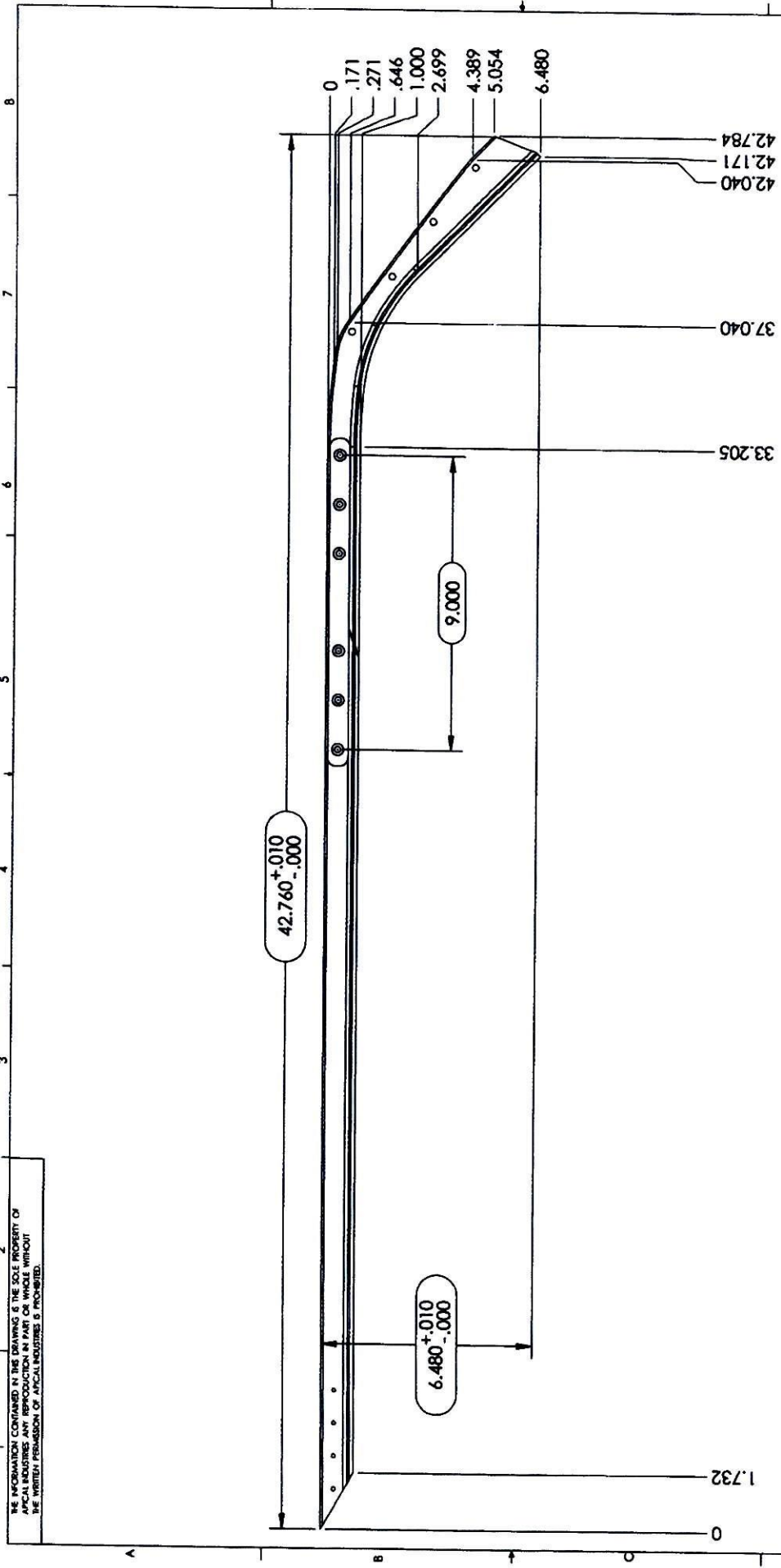
|       |      |       |         |
|-------|------|-------|---------|
| SCALE | NONE | SHEET | 6 OF 12 |
|-------|------|-------|---------|

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|                                                                                                                                             |  |                                         |                      |
|---------------------------------------------------------------------------------------------------------------------------------------------|--|-----------------------------------------|----------------------|
| ORIGINAL DATE<br>8-10-79                                                                                                                    |  | APICAL INDUSTRIES                       |                      |
| DRAWN BY<br>J. B. BAKER                                                                                                                     |  | 2608 TEMPLE HEIGHTS DR.                 |                      |
| CHECKED BY<br>J. B. BAKER                                                                                                                   |  | OCEANSIDE, CA. 92056-3512 (760)724-5300 |                      |
| DESIGNED APPROVAL<br>P. BAIRD                                                                                                               |  | DEFLECTORS                              |                      |
| CONTRACT NO.                                                                                                                                |  | REV. C                                  |                      |
| UNLESS OTHERWISE SPECIFIED<br>DIMENSIONS ARE IN INCHES<br>TOLERANCES ARE:<br>1 PLACE DECIMALS ±.01<br>2 PLACE DECIMALS ±.005<br>ANGLES ±.5° |  | MT (CAGE CODE)<br>B 07M26               | DWG. NO.<br>647.3900 |
| SCALE NONE                                                                                                                                  |  | SHEET 7 OF 12                           |                      |

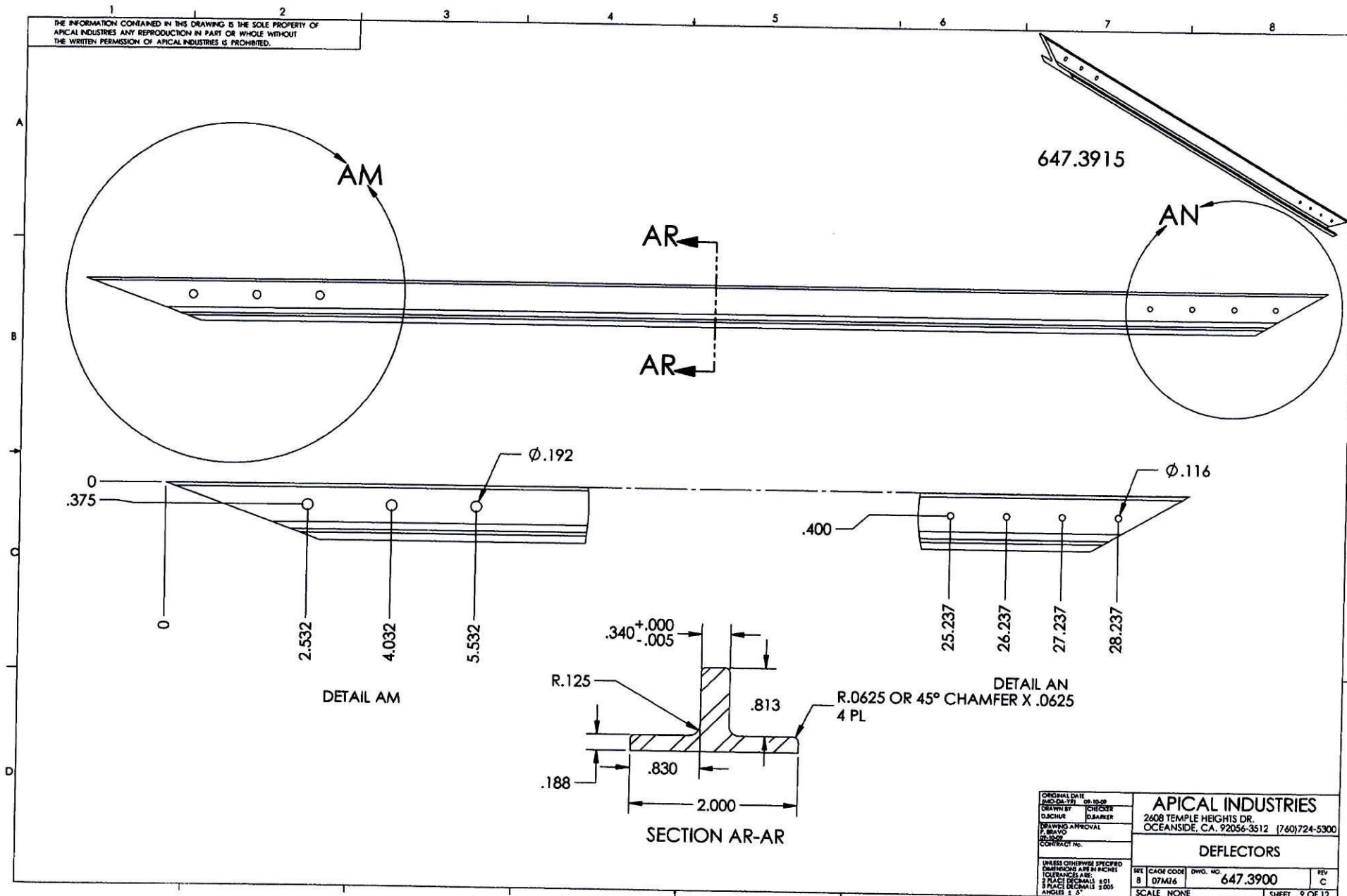
2  
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|                   |          |                         |                           |
|-------------------|----------|-------------------------|---------------------------|
| ORIGINAL DATE     |          | DATE                    | BY                        |
| APICAL INDUSTRIES |          | 2608 TEMPLE HEIGHTS DR. | OCEANSIDE, CA. 92056-3512 |
| PROJECT NO.       |          | 17401724-5300           |                           |
| DEFLECTORS        |          |                         |                           |
| REV               | DATE     | DESCRIPTION             | BY                        |
| 1                 | 07/16/16 | 647.3900                | C                         |
| SCALE             |          | NONE                    |                           |
| SHEET             |          | 8 OF 12                 |                           |

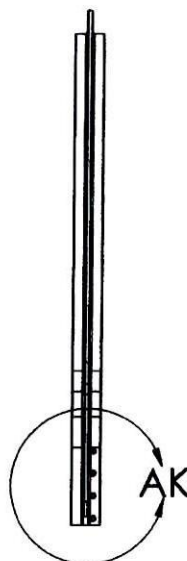


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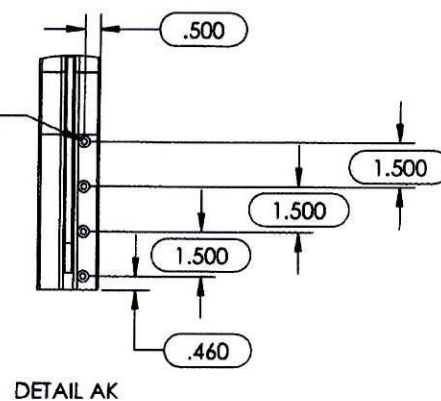


|                                                                                                                                             |  |                                          |          |
|---------------------------------------------------------------------------------------------------------------------------------------------|--|------------------------------------------|----------|
| ORIGINAL DATE<br>JULY 1978                                                                                                                  |  | APICAL INDUSTRIES                        |          |
| DRAWN BY<br>D.J. BAKER                                                                                                                      |  | 2608 TEMPLE HEIGHTS DR.                  |          |
| CHECKED BY<br>D.J. BAKER                                                                                                                    |  | OCEANSIDE, CA. 92056-3512 (760) 724-5300 |          |
| DRAWING APPROVAL<br>P. BRAVO                                                                                                                |  | DEFLECTORS                               |          |
| SUBJECT<br>CONTRACT NO.                                                                                                                     |  | 647.3900                                 |          |
| UNLESS OTHERWISE SPECIFIED<br>DIMENSIONS ARE IN INCHES<br>TOLERANCES ARE:<br>2 PLACE DECIMALS ±.01<br>3 PLACE DECIMALS ±.005<br>ANGLES ± 5° |  | REV<br>B 07M26                           | REV<br>C |
| SCALE NONE                                                                                                                                  |  | SHEET 9 OF 12                            |          |

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4X  $\phi .196 \pm .010$  THRU ALL  
✓  $\phi .385 \pm .020 \times 100^\circ \pm 1.000^\circ$

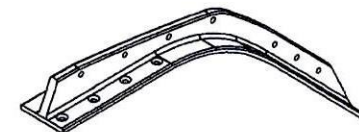


DETAIL AK

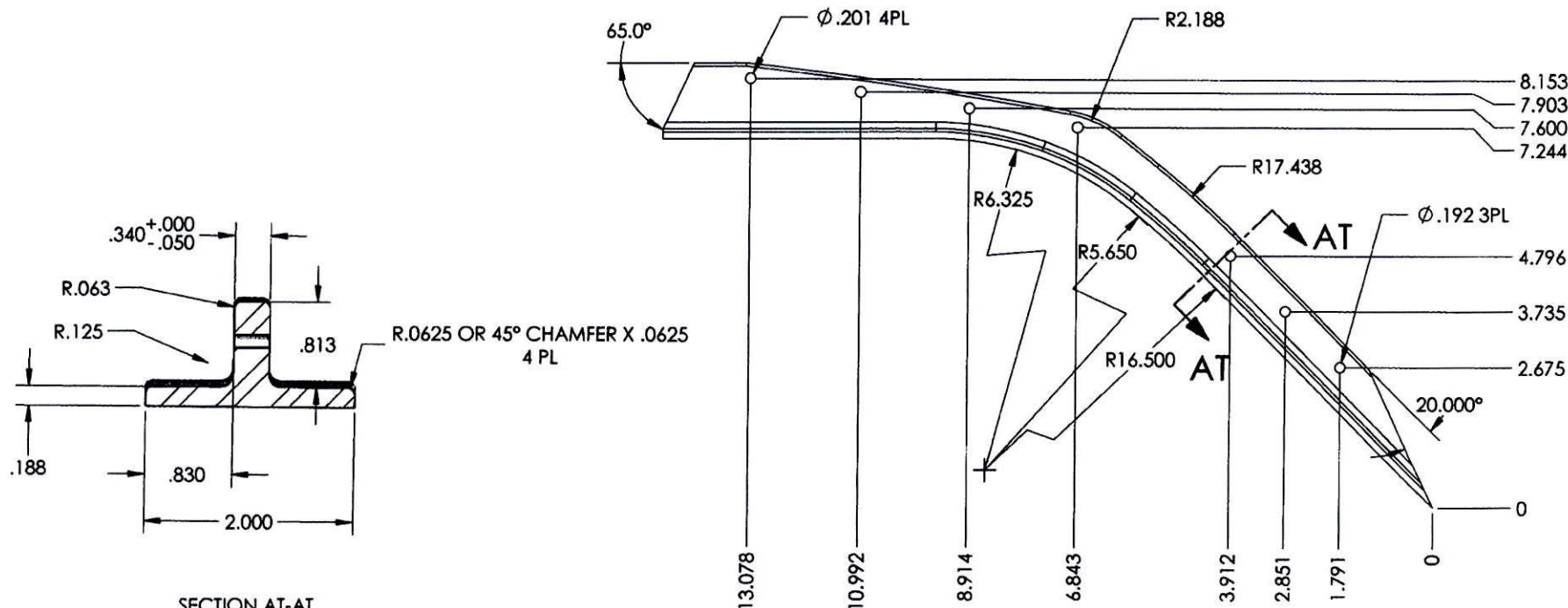
647.3915

|                                                                                                                                             |  |                                         |          |
|---------------------------------------------------------------------------------------------------------------------------------------------|--|-----------------------------------------|----------|
| ORIGINAL DATE<br>1/24/04 11:00 AM                                                                                                           |  | APICAL INDUSTRIES                       |          |
| DRAWN BY<br>D. SCHUB                                                                                                                        |  | 2608 TEMPLE HEIGHTS DR.                 |          |
| DRAWING APPROVAL<br>P. BRAVO                                                                                                                |  | OCEANSIDE, CA. 92056-3512 (760)724-5300 |          |
| CONTACT NO.                                                                                                                                 |  | DEFLECTORS                              |          |
| UNLESS OTHERWISE SPECIFIED<br>DIMENSIONS ARE IN INCHES<br>TOLERANCES ARE:<br>2 PLACE DECIMALS ±.01<br>3 PLACE DECIMALS ±.001<br>ANGLES ±.5° |  | QTY<br>8                                | REV<br>C |
| CAGE CODE<br>07M26                                                                                                                          |  | DWG. NO.<br>647.3900                    |          |
| SCALE<br>NONE                                                                                                                               |  | SHEET<br>10 OF 12                       |          |

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647.3916



|                              |           |                                                                                                                                              |      |
|------------------------------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------|------|
| ORIGINAL DATE<br>11/01/1988  |           | APICAL INDUSTRIES                                                                                                                            |      |
| DRAWN BY<br>D. SCHUR         |           | 2608 TEMPLE HEIGHTS DR.<br>OCEANSIDE, CA. 92056-3512 (760)724-5300                                                                           |      |
| CHECKED BY<br>D. SCHUR       |           | DEFLECTORS                                                                                                                                   |      |
| DRAWING APPROVAL<br>P. BRAVO |           | UNLESS OTHERWISE SPECIFIED<br>DIMENSIONS ARE IN INCHES<br>TOLERANCES ARE:<br>2 PLACE DECIMALS 1:01<br>3 PLACE DECIMALS 1:005<br>ANGLES ± .5° |      |
| REV                          | CAGE CODE | QWG. NO.                                                                                                                                     | REV. |
| B                            | 07MA26    | 647.3900                                                                                                                                     | C    |
| SCALE NONE                   |           | SHEET 11 OF 12                                                                                                                               |      |



1 2 3 4 5 6 7 8

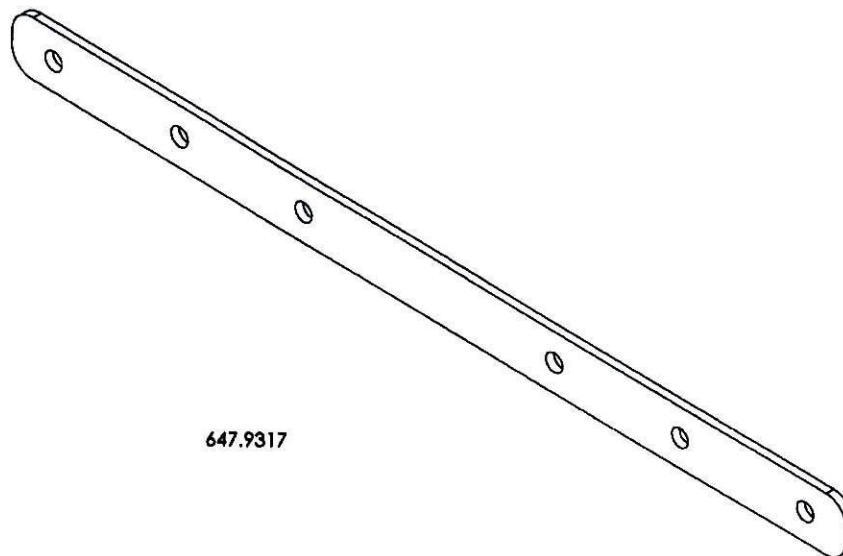
A

B

C

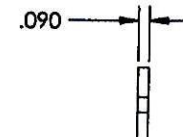
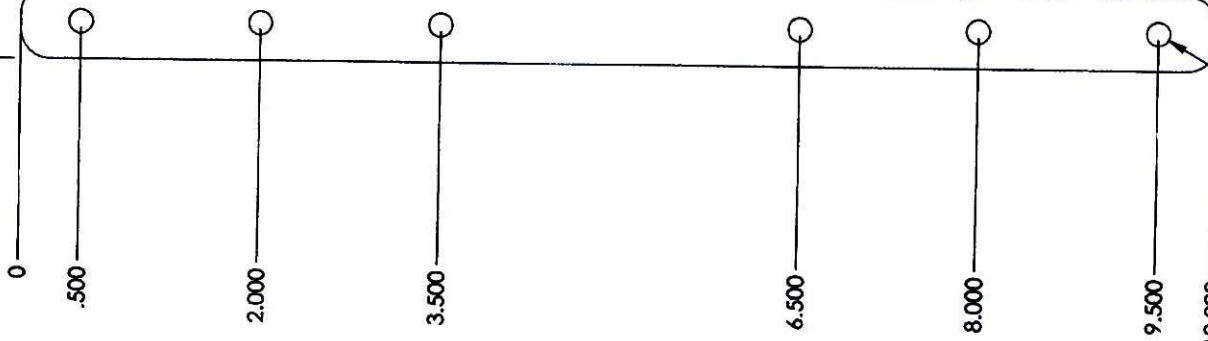
D

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R.250  
4 PL

.625



Ø.196  
6 PL

|                                                                                 |  |                                          |                |
|---------------------------------------------------------------------------------|--|------------------------------------------|----------------|
| ORIGINAL DATE<br>REV. DATE                                                      |  | APICAL INDUSTRIES                        |                |
| DRAWN BY<br>CHECKED                                                             |  | 2608 TEMPLE HEIGHTS DR.                  |                |
| DESIGNED BY<br>APPROVED                                                         |  | OCEANSIDE, CA. 92056-3512 (760) 724-5300 |                |
| CONTRACT NO.                                                                    |  | DEFLECTORS                               |                |
| UNLESS OTHERWISE SPECIFIED<br>DIMENSIONS ARE IN INCHES                          |  | REV. CAGE CODE                           | DWG. NO.       |
| TOLERANCES ARE:<br>1 PLACE DECIMALS ±.01<br>2 PLACE DECIMALS ±.005<br>ANGLES 1° |  | B 07M16                                  | 647.3900       |
|                                                                                 |  | SCALE NONE                               | SHEET 12 OF 12 |



Dart Aerospace Ltd.  
1270 Aberdeen St  
Hawkesbury, ON  
K6A 1K7  
Canada

## Master Unit 001089

Tel (613) 632-5200

---

| Containers on Master Unit 001089 |               |                  |           |          |
|----------------------------------|---------------|------------------|-----------|----------|
| Serial No                        | Part No       | Customer Part No | Status    | Quantity |
| F158496                          | 647.3912      |                  | Allocated | 2        |
| S044432                          | 647.3914      |                  | Allocated | 2        |
| S044433                          | MS20470AD6-12 |                  | Allocated | 6        |